

**REMARKS**

**INTERVIEW SUMMARY**

On April 10, 2008, the undersigned spoke with the Examiner on the telephone with respect to page 8 second paragraph, of the outstanding Office Action: Therein [at page 8 second paragraph] the PTO stated, "Fujiyama et al meets the claim limitation of "organic compound selected from the group consisting of a condensed aromatic ring."

Then the Examiner suggested an interview with a written proposal; and, in turn, the undersigned requested the presence of an Examiner with signatory authority. On April 14 the Examiner indicated that SPE Mr. Jagganathan would be going on vacation; and thus another SPE in 1700 would be present. On April 22, SPE David Wu and Examiner Reddy and the undersigned conferred in a telephone conference based on the written submission to the Examiner. No issue was reached. The undersigned expresses her gratitude to both for the time and thoughtful input.

**REMARKS CONCERNING THE OUTSTANDING OFFICE ACTION**

Reconsideration of the Office Action of May 17, 2007 is respectfully solicited. Applicants note with appreciation the indication of allowable subject matter of Claims 6, 7, 12-13, and 18-20. These have been rewritten in the independent form.

Claim 1 amendment with respect to the word 'dissolved' is supported by paragraph [00018], page 6 and paragraph [00022] at page 6 of the specification. Deletion of 'characterized in that' is accompanied by insertion of "wherein", to conform to domestic vernacular. The recitation(s) in Claim 1 and Claims 21-22 concerning the elemental constitution of the isocyclic and heterocyclic compounds are supported by the examples, particularly the Table 1 (bridging pages 9-12 of the specification), and by the specification at [00011], third sentence at page 4; [00012], first sentence thereof at page 6; and [00015] and [00016] at page 5. The recitations/amendments in claim 1 are presented to be responsive to the USPTO Examiner's position that the claim 1 Markush group read on polysulfides; since applicants do not agree with that position, the only reason to present the amendment of Claim 1 is to respond to that position and to reduce the costs of prosecution.

Applicants respectfully traverse the rejections of the claims over Fujiyama. Please see Sections 2131 and 2131.01I of the MPEP; these sections require that a reference applied as anticipatory provide written description and enablement for the subject matter under examination. Fujiyama does neither.

The reference describes, as optical materials, use of compounds  $A-(--S-B^k)_n$  [formula (1)], wherein S is sulfur, n is 2 to 12, and A and B are radical substituents of the sulfur atom(s). Those Fujiyama optical materials are molecules which contain 2 to 12 sulfur atoms per molecule, and thus may be called polysulfides. And those optical materials contain two substituents bonded to each of the at least 2 sulfur atoms [to wit, A and B]. Please see paragraph

there is no suggestion to make applicants' waveguide core in which condensed aromatic compounds are dissolved in the core medium.

Applicants respectfully traverse the rejection of Claims over Heyningen. As noted in the previous response, Heyningen relates to chiral, or optically active polymers which are useful for optical devices. See page 1 [0012]. "...an optical device is provided which comprises an optically active compound comprising a chromophore and a polymer, where either...or both are chiral, and where the chromophore undergoes alignment. [[0012]]"

Moreover, Heyningen describes chemical bonding between the chromophore and the polymer in paragraphs [0014], [0015] and [0022]. Please see the ABSTRACT, wherein it is stated,

"The disclosure is also directed to electro-optic compounds wherein chromophore substituents are chemically bound to a chiral polymer..."

Heyningen does not describe dissolving applicants' recited compounds in a polymer. Heyningen does not describe aromatic systems which share carbon atoms. Nor does Ducharme.

Not only does Heyningen fail to anticipate the claims under examination, but the requirements of Heyningen disclosure lead away from applicants' claims.

Applicants respectfully traverse the rejection(s) of claims under 35 USC 103(a) over Ducharme in view of Chemla. Ducharme relates to compositions containing three components. The three components comprise a polymer, a

[0063] which recites "description will..be made about A in formula (1), which ***forms a central skeleton...***"

The U.S. PTO has picked portions of the disclosure of Fujiyama; the portions relate to radicals, not molecules, defining either A- or B-. There is no teaching in Fujiyama that any one of the A-, B-, A-S-, A-S or –S-B radical(s) are molecules or operate as optical materials. In summary, there is no description in Fujiyama that any molecule but a di-sulfide or polysulfide will be operative. Please see the Fujiyama examples which do not suggest that fused or condensed aromatic ring system--- whether it be di-suflide or polysulfide—can be made.

Fujiyama does not describe an optical waveguide comprising a polymer and organic compound selected from the group consisting of [1] a condensed aromatic ring system of at least two isocyclic ring systems and [2] a condensed aromatic ring system comprising at least one heterocyclic aromatic ring containing at least one heteroatom. Fujiyama does not enable the production of a waveguide with the parameters of Claim 1. Please see MPEP Section 2131.01I.

In summary, Fujiyama does not relate to compounds which render applicants' components structurally obvious. There is no suggestion in Fujiyama to eliminate the two or more –S-S- sulfur atoms. A person of ordinary skill would not look to Fujiyama and as a consequence be led to the idea to exclude polysulfides to arrive at whatever the Fujiyama invention may be. Moreover,

non-linear optical chromophore and a charge transport agent. Examples of non-linear optical chromophores are recited at column 6 et seq. Ducharme at column 6 line 46 et seq describes them as 'have unsymmetrical, polarized, conjugated pi electrons between a donor and acceptor groups.' All of the examples bridging columns 6 and 7 are nitro-substituted [with a second substituent which is amino or RO-] and are not condensed rings.

With respect to the incorporation of the non-linear optical chromophore and charge transport agent, Ducharme indicates at column 2 line 46 et seq.:

"The nonlinear optical chromophore and the charge transport agent can be dispersed in the polymer..or alternatively, can be covalently bonded to the polymer in the backbone or as a pendant group."

In applicants view the Ducharme reference to Chemla does not require all of Chemla recited information unless that information is consistent with the Ducharme requirements of the non-linear optical chromophore. Ducharme does not describe aromatic systems which which are condensed aromatic ring systems.

The USPTO has not shown that Chemla's recitation of 1, benzanthrene satisfies the Ducharme requirements of: unsymmetrical, polarized, conjugated pi electrons between a donor and acceptor groups. In fact, the combination of 1,2 benzanthrene and polymer of the rejected claims is unobvious over the requirements of the Ducharme Chemla combination. Moreover, there is no USPTO showing that the requirements of Ducharme of dispersal or covalent

reaction of the two dopants with the polymer are satisfied by the PTO's specific reliance and reference to Chemla.

Absent a showing that Ducharme requirements of unsymmetrical, polarized, conjugated pi electrons between a donor and acceptor groups are satisfied by all compounds in chemla, use of Chemla, in the grounds of rejection requires hindsight. There is simply no logical reason to believe that the compounds relied upon by the USPTO citation of Chemla would have been obvious to the person of ordinary skill in view of the Ducharme requirements.

The combination with Ducharme does not lead to the present invention according claim 1, because the "use [of] organic molecular crystals like 1,2-Benzanthracene as a chromophore in the photorefractive material of Ducharme" (citation of the official action) will not result in a solution of an organic compound in a polymer. Chemla describes powders (page 221, line 2) or crystals. Chemla and as well Ducharme are silent about preparing a solution in the polymer. Ducharme describes in col. 3, esp. in the first two paragraphs, a crosslinking chemical reaction between the chromophore (the organic compound) and the polymer. A "dispersion" according to the wording of Ducharme, col. 2, line 48 seems to be a crosslinked chromophore in a polymer. Therefore, the suggestion from Ducharme is that monomer should be functionalized prior to polymerization. The 1,2-Benzanthracene as well as 3,4-Benzopyrene, which are mentioned at the end of a long list in Chemla, would not be taken into consideration by a person skilled in the art to produce a solution of the organic compound in a polymer for manufacturing an optical wave guide,

because Ducharme (as well as Heyningen) teach crosslinking and because there is no hint to produce a solution of crystals or powders in a polymer and to use this solution as an optical wave guide.

Gott does not make up for the deficiencies of Ducharme and Chemla. Gott is entitled **"Effect of molecular structure on optical second-harmonic generation from organic crystals."** And teaches the properties of organic crystals may be controlled by their structure. The Gott teachings concerning crystals are inconsistent with applicants' recitation of 'dissolved' and with the teaching of Ducharme if the molecules of the crystals are crosslinked to a polymer as they no longer retain their identity.

Applicants note the PTO's response, in the outstanding Office Action, to applicants prior arguments. This was the point of the requested interview(s), to understand that position.

An early allowance is respectfully solicited.

Respectfully submitted,



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